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Unemployment, Job Creation, and Job Destruction

Unemployment is a key variable in macroeconomics. The most significant aspect of a recession is that people are thrown out of work and become unemployed. In a bad recession, one worker out of 10 is unemployed. Even in normal times, 5 or 6 percent of the labor force is unemployed in the United States, and unemployment has been even higher in most European countries for the past 15 years. In booms, a low unemployment rate—4 or even 3 percent—is a sign of plentiful jobs for workers and recruitment problems for some employers. One of the most important questions in macroeconomics is why the economy does not provide work for the entire labor force. Even in the best of times, some people are unemployed.

In this chapter, we develop a unified view of unemployment that deals with the amount of unemployment in normal times (the natural rate of unemployment) and with the bursts of higher unemployment that occur during recessions. Our discussion of unemployment is a bridge from the long-run growth model to the short-run fluctuations model. In the growth model, the natural rate of unemployment is a limit on the amount of labor available as an input to production. In the fluctuations model—to be developed in the next three chapters—unemployment can change significantly from month to month.

5.1

MEASURING UNEMPLOYMENT

The unemployed are people who are looking for work and are available for work, but who have not found jobs. One of the principal purposes of the Current Population Survey (discussed in Chapter 2 as one of the main sources of information about workers) is to determine how many people are unemployed each month. The survey counts you as unemployed if you did not work at all during the survey week and you are looking for work. In each survey, several million people are found to be unemployed. The **labor force** is defined as the number of people 16 years of age or over who are either working or unemployed. The *unemployment rate* is the percentage of the labor force that is unemployed.

There are millions of people who are not working but who are not counted as unemployed. They are considered out of the labor force because they are retired, in school, at home looking after their own children, sick, or not looking for work for some other reason. The *labor force participation rate* is the percentage of the working-age population that is in the labor force.

The survey data can also be used to tell us the reasons for unemployment—a job loss, a quit, or simply someone who just entered the labor force. Of the 7.4 million people unemployed in February 1996, 48 percent had lost their jobs, 10 percent had quit, and 42 percent had newly entered or reentered the labor force. In a year with more unemployment, 1992, 56 percent of the unemployed had lost their jobs.

MEASURING UNEMPLOYMENT

1. The unemployed are looking for work, available for work, but have not yet found jobs.
2. Unemployment is measured in a national survey of households.

5.2

FLOWS INTO AND OUT OF UNEMPLOYMENT

Flows into and out of unemployment are huge—every month, almost 3 per-

employment. With 3 percent of the labor force becoming unemployed each month, and with a normal unemployment rate of less than 6 percent, most of the unemployed don't stay that way very long. Normal spells of unemployment last for a few weeks, though a small fraction of spells last for many months.

One of the main ways that people become unemployed is by losing jobs. But flows of job seekers into the labor market from school and other nonwork activities are also important. Similarly, one of the main flows out of unemployment is by finding jobs. But many unemployed people drop out of the labor force rather than finding work. We will discuss the determinants of these flows shortly.

To understand the determination of the unemployment rate that results from these high flows into and out of unemployment, it will help to go through a simple mathematical exercise. We let

b = the job-losing rate, the ratio of the number of people who become unemployed in a month to the labor force in that month.

e = the job-finding rate, the fraction of the unemployed who leave unemployment in a month.

u = the unemployment rate, the fraction of the labor force that is unemployed.

Then the flow into unemployment is the amount b , and the flow out of unemployment is the product of the unemployment rate u and the departure rate e ; the flow is ue . The flow of increasing unemployment is the difference between the inflow b and the outflow, ue ; the flow is $b - ue$. So, to understand why unemployment rises in a recession, we need to know why the inflow rate to unemployment, b , is high and why the outflow rate from unemployment, ue , is low.

Before we look at recessions, though, we want to consider normal conditions. Suppose that unemployment does not change from one month to the next, as we would expect to be true in normal conditions. Then the inflow must equal the outflow:

$$b = ue \quad (5.1)$$

This can be solved for the unemployment rate:

$$u = \frac{b}{e} \quad (5.2)$$

The unemployment rate is just the ratio of the job-losing rate, b , to the job-finding rate, e . An economy with a large job-losing rate or a small job-finding rate will have a high unemployment rate. We can break down our discussion

minants of the rate at which people lose jobs and determinants of the rate at which they find jobs. To be more precise, these are the rate at which people become unemployed (since some people become unemployed without losing jobs) and the rate at which they leave unemployment (since some people leave the labor force while they are unemployed and do not find jobs).

In Chapter 3, we learned that there is always some unemployment in the U.S. economy and that economists speak of the natural rate of unemployment as the amount that prevails in normal times. Even in normal times, there are substantial flows into and out of unemployment. One good way to measure normal conditions is to take averages over fairly long periods. For the period 1967 through 1993, average conditions were as follows:

Job-losing rate, b	2.7 percent per month
Job-finding rate, e	43 percent per month
Rate of unemployment, u	6.3 percent of labor force

By this measure, the natural rate of unemployment was 6.4 percent. An average over a longer period including the low-unemployment years of the 1950s and 1960s would be about 5.5 percent. Some economists have concluded that the natural rate may have been over 6 percent in the 1970s and 1980s, but may have fallen to around 5.5 percent in the 1990s.

Flows into Unemployment

How do workers become unemployed? We will break down the sources of new unemployment into the following three categories:

1. Job destruction
2. Job loss without destruction
3. Personal transitions

Job destruction is the result of an employer's decision to terminate a position, dismissing the worker without refilling the job.¹ Job destruction often takes the form of plant closings or elimination of second shifts. Recessions generally have a burst of job destruction around the time that output is declining most rapidly. Even in normal times, rates of job destruction are high—in the average month from 1972 through 1988, almost 2 percent of all jobs in manufacturing were destroyed. Even when the economy is doing well, some industries or firms will be doing badly and will find it necessary to shut down plants or offices or to cut back their employment aggressively.

Job destruction occurs when individual plants or firms are no longer viable and have to be shut down or scaled back. In normal times there is somewhat more job creation than destruction, so employment grows along with the labor force. Part of the source of chronic job destruction and creation is continual shifts across industries. In any year, there will be contractions in some industries and expansions in others, as the economy adjusts to changes in world markets and in consumer preferences. For example, in 1994, a year of strong overall growth in employment, more jobs were destroyed than were created in mining, nondurables manufacturing, and the federal government. Even more job destruction occurs within industries, as dynamic new firms displace the losers.

Job loss without destruction occurs when a worker loses a job but the employer does not reduce total employment. Either the discharged worker is replaced directly or another worker is hired and duties are reorganized. There are massive flows of this type of job loss. Over 5 percent of workers lose their jobs each month.² Though this figure includes job destruction and situations where workers quit jobs voluntarily, it is likely that over half of the loss is job loss without destruction. Many of these losses involve explicitly temporary work, including summer employment for students. The construction industry is a large contributor to this category—contractors hire and lay off workers with particular skills with great frequency.

Personal transitions cause people to quit their jobs. For example, a graduating student may quit a part-time after-school job and look for full-time work. Although flows of job quitters are large, quits are not an important flow into unemployment—only 13 percent of the newly unemployed have quit jobs. Much more important is the transition from nonwork activities. Almost half the newly unemployed were previously out of the labor force. The decision to look for work after being in school, being sick, or being involved in home activities is a major source of the flow into unemployment. In economies or markets where people frequently change their roles in the economy, flows into unemployment will be higher.

Flows out of Unemployment

About two-thirds of the flow out of unemployment is the result of successful job search; one-third of those who stop being unemployed decide to leave the labor force.³ Thus, the major determinant of the flow out of unemployment is the job-finding rate. That rate is the result of interaction of the avail-

ability of jobs, on the one hand, and the strategies that job seekers use to find jobs, on the other hand.

Jobs are constantly available because of the natural flows out of jobs that we just discussed. First, in normal times, there is a flow of job creation at the same rate of almost 2 percent per month that jobs are destroyed. In the same industries where some firms are shutting plants and terminating workers, other firms are opening up new plants and hiring workers. Job creation is actually more stable over the business cycle than is job destruction.⁴ Even in the most severe part of a contraction, when the job destruction rate skyrockets, job creation continues at levels not far below normal.

Just as there are job losses that occur without job destruction, there are flows of new hires that occur without job creation. Workers whose jobs ended normally, as in temporary work, or who quit to return to school or to take other jobs, need to be replaced.

Thus, at all times there are jobs available to absorb the unemployed. Though evidence is scant, it appears that the number of jobs available at any one time is far lower than the number of people looking for work. Nonetheless, in normal times, most of the unemployed find jobs in a month or two. The reason we know this is that job vacancies last only a week or two, on the average. The flow of new vacancies is huge. The typical job seeker keeps in touch with employers who might offer suitable jobs and waits until one opens up. The employer considers applicants quickly and makes a hire. Job seekers remain unemployed until they win suitable jobs.

The strategies followed by job seekers are the other important determinant of the speed at which they find work and thus of the flow out of unemployment. Economists have looked carefully at optimal strategies that workers should follow. The result has been a body of thinking called **search theory**.⁵ One of the basic assumptions in search theory is that wages and working conditions vary across jobs. An optimal job-seeking strategy would not be to take the first job that comes along—it's probably one at the nearest fast-food restaurant. Instead, the job seeker should balance the benefit of starting an available job right away against the benefit of taking a better job that comes along later, net of the cost of waiting. An improvement in wages can justify a long wait. For example, if you have an offer at \$350 per week for a job immediately available, but think that a job paying \$400 per week (14 percent higher) will probably take six weeks to find, and you expect to hold either job until a year from now, it will be better to hold out for the better job. You will make $350 \times 52 = \$18,200$ in the lower-paying job against $400 \times 46 = \$18,400$ in the better job with six more weeks of unemployment.

² Patricia M. Anderson and Bruce D. Meyer, "The Extent and Consequences of Job Turnover," *Brookings Papers on Economic Activity, Microeconomics* (1994), pp. 177–236.

³ Olivier J. Blanchard and Peter Diamond, "The Cyclical Behavior of the Gross Flows of U.S.

⁴ See Davis, Haltiwanger, and Schuh, *Job Creation and Destruction*.

⁵ See Christopher A. Pissarides, *Equilibrium Unemployment Theory* (Cambridge and Oxford, En-

Search theory portrays the activities of job seekers as economically rational, just like other household decisions. We can establish links between the economic environment of job seekers and their job-finding rates by using search theory. Then we can use Equation 5.2 to draw conclusions about how that environment affects the unemployment rate.

First, the job-finding rate will depend on the availability of jobs. If there are large numbers of job seekers and a small flow of new jobs, the probability is small that one job seeker will both find out about a particular new job *and* be offered that job. Second, the job-finding rate will depend on the amount of variation there is in the wages and working conditions for jobs. What matters is the chances of getting a really good job. If there is a small but significant chance that a job will come along that is much better than the typical one, the rational searcher will wait quite a while for that job to materialize. Job-finding rates in such markets—for example, the market for corporate executives—will be low. On the other hand, if all jobs are basically the same, the job seeker will want to take the first one that is offered. Job-finding rates are high in such markets—for example, in the market for temporary office work. Third, the job-finding rate will depend on the cost of waiting until a better job offer is made. Third, the job-finding rate will depend on the cost of waiting until a better job offer is made. If the cost is low, people will have a smaller incentive to find jobs, and so will have lower job-finding rates. Similarly, a program that subsidized people for looking for work would lengthen their period of search and lower their job-finding rates. Finally, the job-finding rate will be lower for jobs that are expected to last a long time. It pays to look for months for a career job, but not for a temporary job.

UNEMPLOYMENT FLOWS

1. About 3 percent of the labor force becomes newly unemployed in the average month.
2. When the unemployment rate is neither rising nor falling, it is given by a formula: the ratio of the job-losing rate to the job-finding rate.
3. A major source of unemployment, especially in recessions, is job destruction. A job is destroyed if the worker holding it is laid off and nobody is hired to replace the worker.
4. The unemployed either find jobs or leave the labor force. About 43 percent of the unemployed depart unemployment in the average month.



THE NATURAL UNEMPLOYMENT RATE

In normal times—when real GDP is equal to potential—unemployment is not zero. Recall from Chapter 3 that the unemployment rate equals the natural rate in normal times. When workers enter the labor force for the first time or after a spell out of the labor force, they need some time to find a job. During this period they are counted as unemployed. Similarly, when workers quit their jobs, there will frequently be a span of time before they find new jobs. Movements from one job to another are particularly common for young workers as they find out what type of job they are best suited for. This is one reason why young workers have higher unemployment rates than older workers. In addition, there are some low-skilled workers who are frequently unemployed. Additional training for such workers would reduce the unemployment rate.

Recall that the formula in Equation 5.2 applies when the unemployment rate is steady, neither rising or falling. Thus the formula describes the natural rate because in normal times the unemployment rate is holding steady. In words it is:

$$\text{Natural unemployment rate} = \frac{\text{Job-losing rate}}{\text{Job-finding rate}} = \frac{b}{e} \quad (5.3)$$

The natural rate will be high in a labor market that has high rates of inflow and low rates of outflow. Economies with high rates of job destruction and creation will have high rates of inflow to unemployment and thus high natural rates. High rates of personal turnover contribute to the numerator and thus also raise the natural rate.

The natural rate will also be high in an economy or market with a low job-finding rate, the denominator in the equation for the natural rate. Economists have identified four special factors that may lower job-finding rates and thus raise the natural rate.

EFFICIENCY WAGES According to the “efficiency wage” view, the employment relationship works best when workers feel that their current jobs are valuable. In this view a valuable job is one that pays well above what

⁶See George A. Akerlof and Janet L. Yellen, *Efficiency Wage Models of the Labor Market* (New

the worker could earn from looking for another job, including the cost of search. If the job is valuable, the threat to fire a worker is effective as a way to get the worker to perform. One way for an employer to make its jobs valuable is to pay higher wages than other employers do. But not every firm can pay more than other firms. As firms bid up wages in order to make their jobs valuable, they will reduce the number of jobs available (because labor demand slopes downward) and increase the number of people looking for those jobs (because labor supply slopes upward). Job-finding rates will be lower in that setting. Jobs will be valuable because fired workers face long periods of search to find new jobs. In a labor market where the efficiency wage theory applies, firms will have numerous applicants on the spot for every job opening and job seekers will find job offers few and far between. Figure 5.1 illustrates the difference between a low-unemployment labor market and a high-unemployment one where the assumptions of efficiency-wage theory apply. Only the right column, with high unemployment, can be an equilibrium in the market.

UNION WAGE PREMIUMS Labor unions may also raise the natural rate. How? One of the purposes of labor unions is to improve wages and working conditions. In markets where unions are successful, the same type of asymmetry predicted by the efficiency wage theory would hold. Firms find hundreds of applicants for good union jobs and job seekers find opportunities for union jobs to be rare. As we noted in our discussion of the search model, it is worth searching longer if there is a small chance of getting a really good job. So an economy with successful unions will probably have a higher natural unemployment rate, according to this line of thought.

MINIMUM WAGES The government intervenes in labor markets for low-wage workers in much the same way that unions do for more-skilled work. If there is rigorous enforcement of minimum wages at levels well above what would otherwise occur, the jobs affected by the minimum wage will be harder to find. To the extent that the legal minimum wage is low relative to wages in general and to the extent that employers simply ignore the law, the minimum wage may not raise the natural rate by very much.

UNEMPLOYMENT INSURANCE Some workers receive payments from the unemployment insurance system during periods of job search—in February 1996, there were 7.4 million workers unemployed and 2.7 million of them drew benefits. Because the benefits are paid to replace lost earnings during unemployment, they are a subsidy for job search. Recall our earlier example where you would be willing to wait 6 weeks for a better job. Suppose instead that you received \$200 per week in unemployment benefits. Then it would

LOW UNEMPLOYMENT*Worker's perspective:*

Wage at current job: \$400 per week.

Wage at next job: \$400 per week.

Time required to find next job: 1 week.

Loss if fired from this job: \$400.

Conclusion: I don't have to work too hard at this job because I only lose \$400 if I am fired and have to move to another job.

Employer's perspective:

I should raise the worker's pay because under present conditions the worker has no reason to work hard.

Conclusion:

The market cannot stay like this because all employers will raise wages.

HIGH UNEMPLOYMENT*Worker's perspective:*

Wage at current job: \$400 per week.

Wage at next job: \$400 per week.

Time required to find next job: 15 weeks.

Loss if fired from this job: \$6,000.

Conclusion: I better work hard at this job because I lose \$6,000 if I am fired and have to move to another job.

Employer's perspective:

I don't need to change the worker's pay because under present conditions the worker has a good reason to work hard.

Conclusion:

The market can stay like this because employers will keep wages at this level.

FIGURE 5.1 Comparison of Low- and High-Unemployment Labor Markets in the Efficiency Wage Model

The left side considers a labor market where employers want to make it expensive for workers to leave their jobs. But it is easy for the workers to find new jobs because jobs are plentiful and it will only take a week to find one. Employers will then raise wages. The left side does not depict an equilibrium. On the right side, it is difficult to find new jobs and a worker sacrifices \$6,000 by losing the current job. Employers feel no need to change wages. The labor market is in equilibrium with high unemployment.

the lower-wage job over the year, but $\$200 \times 12 + \$400 \cdot 40 = \$18,400$ from the unemployment benefits and the higher-wage job. Thus unemployment insurance makes the unemployed choosier in accepting lower-wage jobs, and encourages search strategies with lower job-finding rates. Of course, the motive for the unemployment insurance system is to help workers deal with the sudden loss of income that goes with unemployment. The lengthening

Does the Natural Rate Change over Time?

The forces that determine the natural rate are not immutable. As they change, we would expect the natural rate to change. The natural rate should be high if an unusual restructuring of the economy is in progress, with high rates of job destruction in shrinking industries and job creation in expanding ones. Large changes in defense spending might be one source of this type of restructuring. The natural rate should be high if the labor force has an unusual proportion of younger workers with higher rates of personal transition. Declining unionization may lower the natural rate. Higher minimum wages and higher unemployment benefits would raise the natural rate.

Over the past decade, most of these trends would suggest a lowering of the natural rate. The majority of the baby boom generation are now over forty, a time of low turnover. Unionization of the workforce has declined dramatically. The minimum wage has not grown as fast as wages in general. A declining fraction of the unemployed receive benefits, and benefits have not risen in relation to wages. Although there is much disagreement about change in the natural rate among economists, some evidence supports the hypothesis of a decline. Unemployment was above 6 percent in the expansion of the late 1970s, even when other conditions, such as worsening inflation, suggested that the economy was in a boom. By contrast, unemployment in the expansion years of the mid-1990s fell below 6 percent, without signs that these favorable labor market conditions were unsustainable.

THE NATURAL UNEMPLOYMENT RATE

1. The natural unemployment rate is the amount of unemployment in normal times and is around 5 or 6 percent.
2. Forces tending to raise the natural rate are efficiency wage setting, union wage premiums, minimum wages, and unemployment insurance.
3. The determinants of the natural rate vary over time. Current trends are probably lowering the rate.

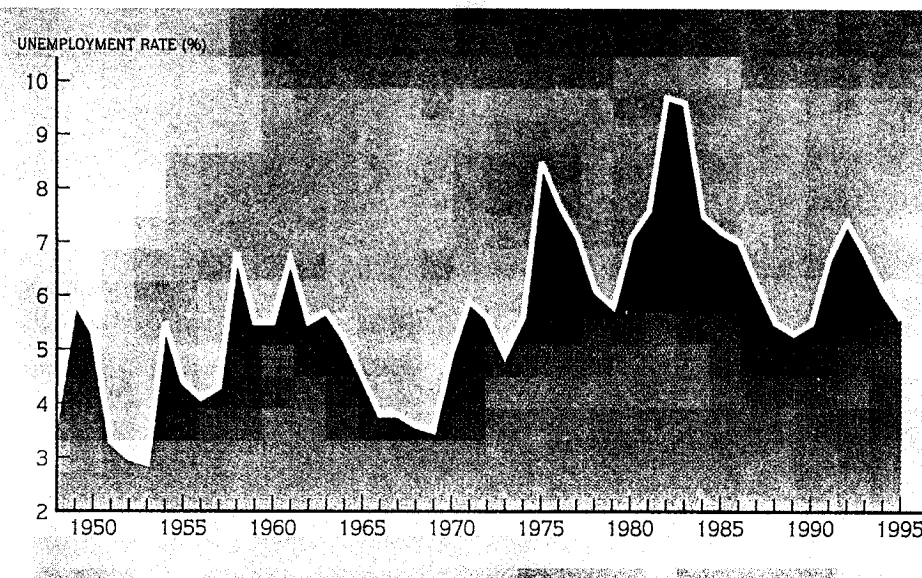


FIGURE 5.2 The Unemployment Rate

The unemployment rate has fluctuated between 3 and 10 percent since 1950. Unemployment rises during recessions and falls during expansions.

Source: *Economic Report of the President*, 1996, Table B-38.

high relative to potential, unemployment is low. In recessions, unemployment rises sharply and then declines more gradually as the recovery gets under way.

We can analyze fluctuations in unemployment in the framework developed in the first section. Recall that the number of people becoming unemployed each month in relation to the labor force is the inflow rate b . The number leaving unemployment, in relation to the labor force, is ue , the product of the unemployment rate u and the rate at which people depart from unemployment e . The rate at which unemployment is rising, in relation to the labor force, is $b - ue$. If we know the starting unemployment rate and the inflow and outflow rates, we compute the increase in unemployment. Then we can update the unemployment rate and repeat the process. To put it differently, we can think of today's unemployment rate as the result of the history of inflows and outflows. Because most spells of unemployment last only a month or two, today's unemployment rate actually

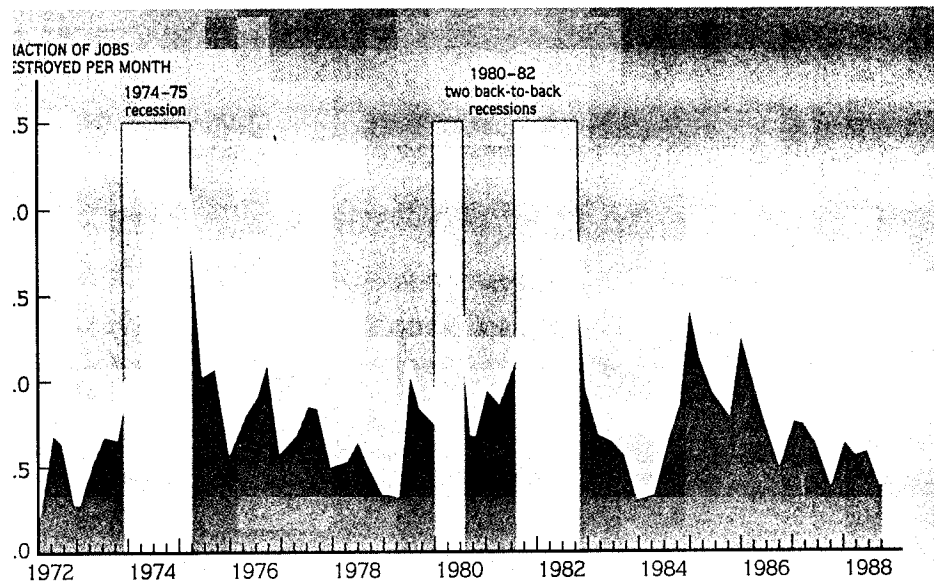


FIGURE 5.3 Job Destruction Rate in Manufacturing

Each month, between 1.5 and 3.5 percent of jobs in manufacturing are destroyed by plant shutdowns, elimination of shifts, or other sources of reduced employment. The job-destruction rate reaches sharp peaks in recession years such as 1975, 1980, and 1982. But even in years of good conditions in the labor market, many jobs are destroyed. Job destruction is a major source of unemployment, especially in recessions.

Source: Davis, Haltiwanger, and Schuh, *Job Creation and Destruction*, 1996.

Changes in the Unemployment Flows

By far the most important source of changes in inflows to unemployment is job destruction. Figure 5.3 shows the job destruction rate in manufacturing. Occasionally, job destruction skyrockets. The peaks in 1975, 1980, and 1982 coincided with recessions. The peaks in 1985 and 1986 occurred during expansions; the one in 1986 may have been triggered by the collapse of oil prices in that year. Rates of inflow to unemployment jump up during these episodes of job destruction. As is shown in Figure 5.2, the unemployment rate jumps up as well, because inflows to unemployment exceed outflows.

Inflow rates to unemployment remain high after a burst of job destruction.⁸ There are secondary effects from the displacement of workers. For example, a worker who is terminated in a plant closing may take temporary

⁸ Calculation of the job-destruction rate requires processing data on individual plants. The data are available from only for manufacturing and only for the period 1972-88.

work after a period of search. When the temporary job is over, the worker will once again become unemployed. The secondary effects of the job destruction from a serious recession, such as that of 1982, appear to last for several years.

Outflows from unemployment decline after a burst of job destruction, as well. When job-finding rates are high, the fraction of unemployed workers who remain unemployed for extended periods is low. When outflows from unemployment occur more slowly, the fraction of long-term unemployed rises. Figure 5.4 compares unemployment duration in a good year, 1989, and a weak year in the aftermath of a recession, 1992. In 1992, 21 percent of the unemployed had been looking for work for more than 26 weeks, compared to only 10 percent in the good year, 1989. People find jobs more rapidly in strong markets than in weak markets. Probably the main difference is that job seekers are competing with larger numbers of rivals for each job opening when unemployment is high.

The overall story of fluctuations in unemployment starts with a burst of job destruction, resulting from an oil price shock, financial crisis, or other

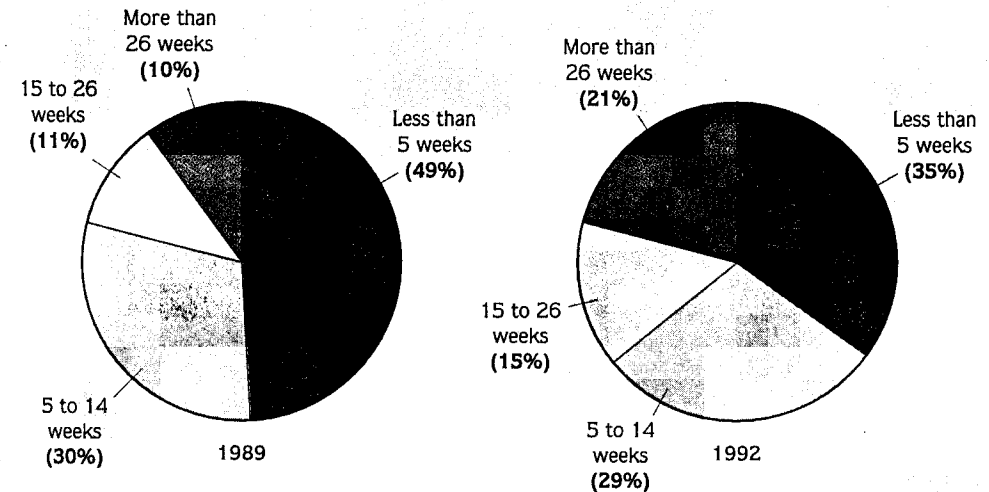


FIGURE 5.4 Unemployment Duration in a Slump and in a Boom

The pie charts show the percentage of workers unemployed for different lengths of time in a bad year just at the end of a recession (1992) and in a good year just before the start of a recession (1989). Long-term unemployment is relatively high in a bad year. Job-finding rates are higher in good years.

adverse development. Unemployment jumps upward. It remains at levels above the natural rate for several years after the shock. During this period, there are continuing unusually high flows into unemployment from the secondary effects of the shock, as workers have second and third spells of unemployment after their displacement in the original job destruction. Another factor holding unemployment above the natural rate is that job-finding rates are lower for several years after the shock.

Okun's Law

There is a useful shorthand formula that closely approximates the cyclical relationship between unemployment and real GDP. Commonly called **Okun's law**, after its discoverer, Arthur Okun, the law says that for each percentage point by which the unemployment rate is above the natural rate, real GDP is 3 percent below potential GDP. The percentage departure of GDP from potential is called the **GDP gap**. For example, if unemployment is 8 percent, 2 percentage points above the natural rate of 6 percent, the real GDP is 6 percent below potential. The GDP gap is minus 6 percent. The historical accuracy of Okun's law is illustrated in Figure 5.5.

FLUCTUATIONS IN UNEMPLOYMENT

1. Unemployment in the United States fluctuates from 3 percent of the labor force in the sharpest booms to 10 percent in the worst recessions.
2. The unemployment rate is closely related to the deviations of real GDP from potential GDP. This relation is called Okun's law.

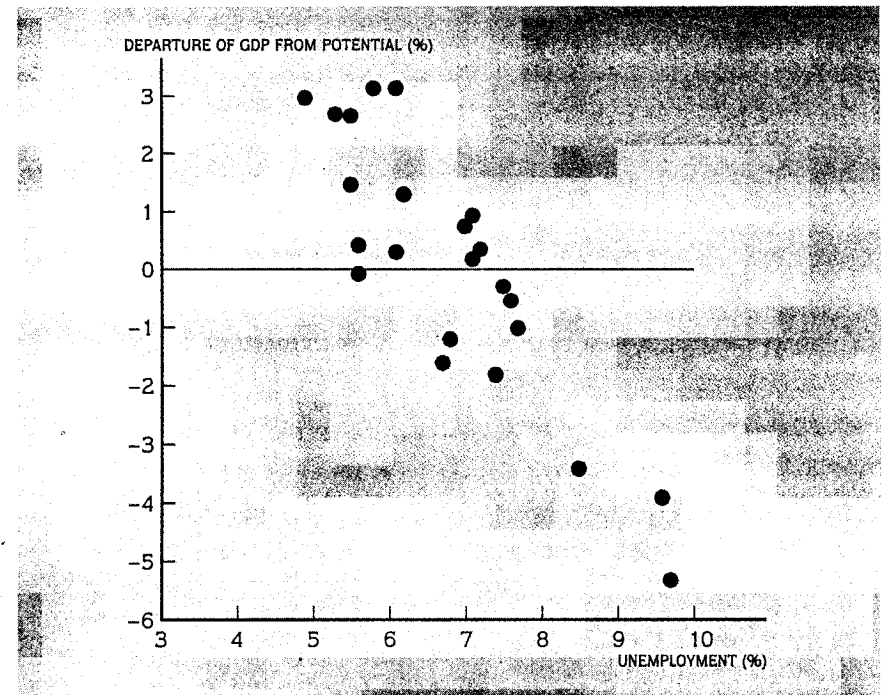


FIGURE 5.5 Okun's Law

The movements in unemployment are closely related to the movements in the percentage departures of real GDP from potential GDP. The slope of the relationship is roughly 3 percentage points of real GDP for each percent of unemployment.

market wage? Why is the standard model of supply and demand not an accurate model of the labor market? These are central questions of macroeconomic analysis.

The discussion earlier in this chapter showed what happens during the extended period when unemployment is high, during and after a recession, without completely answering these central questions. Instead of closing plants and destroying jobs, for example, employers could lower wages in order to keep marginal plants in business. And employers could hire aggressively during periods of high unemployment, when job seekers are numerous and jobs are easy to fill, and pay workers a little less than they would in good times. In search theory, job seekers should set their sights a little lower when jobs are hard to find.

ANALYSIS OF UNEMPLOYMENT IN THE FRAMEWORK OF SUPPLY AND DEMAND

Why do so many people lose their jobs in recessions? Why does unemployment linger for several years after a recession? Why doesn't the labor market adjust quickly to provide employment for everyone willing to work at the

NEW RESEARCH IN PRACTICE A Silver Lining to the Storm Clouds of Recession?

Recessions are times of hardship for unemployed workers and lower average incomes for people in general. But recently economists have been looking at the benefit side as well.* The benefits arise because recessions are times when the economy has more incentive to regroup and reorganize. There are two theories to this line of thought. One says that firms tend to keep outdated plants in operation during recessions are times to prune them out and build modern plants. The other says that recessions are times when firms have less incentive to produce output and therefore a lower opportunity cost for reorganizing. In both cases, there is no doubt that recessions are desirable, only that the economy is good at figuring out useful alternative activities during recessions.

In the "cleansing" view, firms wait until a recession to shut down old-fashioned plants. The sector can respond to lower demand both by reducing the rate of opening of new plants and by closing down old ones. In the cleansing model, the second effect is the more important. This property of the cleansing model is in line with the evidence that a disproportionate fraction of employment reductions in recessions take the form of mass layoffs rather than reduced job creation.

The second view has been called the "pit stop" model of recessions. In auto racing, cars are required to slow down when the yellow light is on to avoid an accident. Drivers often choose yellow-light periods to make pit stops to refuel and change tires. Relative to the situation when the green light is on and they can drive as fast as possible,

the opportunity cost of a pit stop is lower when the yellow light is on. A recession is like a yellow-light period. It's less profitable to produce and sell output, so firms and workers have lower opportunity costs for other activities. Restructuring is an activity that is cheaper in a recession. During restructuring, firms lay off workers who are not well matched to their current jobs. These workers enter the labor market and search for new jobs that are better matches. Recessions and the periods of high unemployment that follow them are times when the economy is building better organizations, getting ready for the next burst of demand for output.†

Whatever the merit of these views, the flows through the labor market are much greater during recessions and their aftermaths than in booms. In 1982, a year of severe recession, 3.5 percent of the labor force became newly unemployed each month. In 1994, a year of favorable and improving conditions, only 2.1 percent of the labor force became newly unemployed each month. The labor market was called upon to handle about 70 percent more matching of job seekers to jobs in the recession year than in the good year. Even if there proves to be little support for the optimistic view that finding new jobs for so many extra workers is good for the economy, our thinking about recessions should always keep in mind how much bigger the flows are in the labor market during recessions. If the market could not handle the higher flows, recessions would be even harder on job losers than they are in today's U.S. economy.

*Robert J. Caballero and Mohamad L. Hammour, "The Cleansing Effect of Recessions," *American Economic Review* 84 (December 1994): 1350–1368.

†Robert E. Hall, "Labor Demand, Labor Supply, and Employment Volatility," *NBER Macroeconomics Annual* 1991, pp. 17–47.

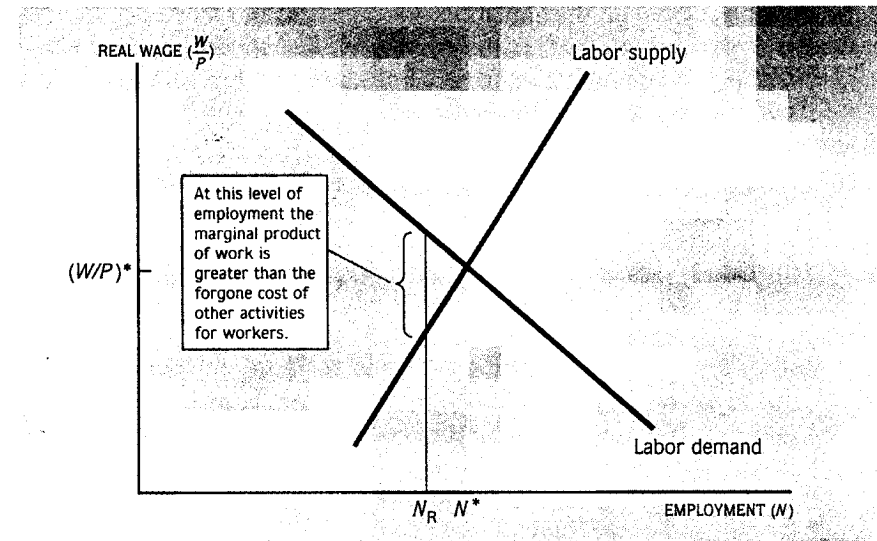


FIGURE 5.6 Incentives When Employment Is below Equilibrium

If employment is at the recession level, employers and workers have incentives to increase the amount of work. The incentives are measured in dollars per hour on the vertical (real-wage) axis.

Standard principles of economics seem to suggest that the incentives to correct excess unemployment are strong. Figure 5.6 shows the labor supply and demand diagram, with employment N on the horizontal axis and the real wage W/P on the vertical axis. Recall that we first derived this diagram in Chapter 3 (see Figure 3.5). However, unlike in Chapter 3, we now consider the possibility that there is unemployment; that is, the actual level of employment in a recession (N_R) is less than the equilibrium level of employment (N^*).

One reason why employment might be at the low level N_R rather than at the equilibrium level N^* is that the real wage W/P is above its equilibrium level. Then the quantity of labor demand by firms on their labor demand curves is N_R . The real wage could be above equilibrium because of government restrictions on wages or because of slow adjustment of wages. High unemployment in Germany, France, and Spain in the mid-1990s may have been the result of excess real wages, for example.

Regardless of the level of the real wage in Figure 5.6, when employment is below the equilibrium level, there are incentives facing either employers or workers or both to raise the amount of work. The difference

between the marginal product of labor (the labor demand schedule) and the real wage is the incentive facing the employer. One added worker will increase the firm's revenue by the marginal product, but the worker only has to be paid the real wage. The difference is a profit opportunity for the firm; it provides an economic incentive to expand output.

The difference between the real wage and the worker's value of time (the labor supply schedule) is the incentive facing the worker. Another hour of work will earn the worker the real wage, but the cost (forgone time in other activities) is a smaller amount. The difference is an economic opportunity for the worker; it provides an economic incentive to increase hours worked.

Both firms and workers have incentives to raise employment when employment is at a recession level, below equilibrium. How long it takes for these incentives to bring about an expansion of employment back to equilibrium is a question macroeconomists debate frequently and intensely. For now, we will simply make the practical observation that employment does frequently drop below its equilibrium level, especially in recessions. It takes several years for employment to return to equilibrium. We conclude that incentives operate slowly over years, not days, weeks, or months. Until incentives do their job, the level of employment can remain below equilibrium. In the next chapter, we begin the development of a short-run model to describe the transitory departures of the economy from its long-run growth path.

THE LABOR MARKET OUT OF EQUILIBRIUM

1. When level of employment is lower than the full-employment level, firms and workers face incentives to expand employment.
2. These incentives take time to operate. High unemployment can persist for several years.

REVIEW AND PRACTICE

Major Points

1. Unemployment is measured in a survey of households. A person is counted as unemployed if he or she is available for work and looking for work, but has not yet found a job.
2. There are substantial flows into and out of unemployment. The unemployment rate is the ratio of the job-losing rate to the job-finding rate.
3. The natural rate of unemployment is the amount that prevails in normal times; it is around 5 or 6 percent.
4. The flow into unemployment comes from job destruction, other job losses, and personal transitions that cause people to quit jobs and look for new ones.
5. The flow out of unemployment depends on the job-finding rate, which averages 43 percent per month.
6. The efficiency wage model offers one reason for low job-finding rates. If jobs are easy to find, employers will raise wages in order to motivate their workers.
7. Union wage premiums and the minimum wage are other reasons why jobs may be hard to find.
8. Unemployment insurance causes job seekers to be choosier and thus lowers job-finding rates.
9. Unemployment moves over the business cycle. In recessions it rises as high as 10 percent and in booms it falls as low as 3 percent.
10. Okun's law describes the relation between unemployment and real GDP. For each percentage point by which unemployment is above the natural rate, real GDP is 3 percent below potential.
11. When unemployment is high during a recession, there are incentives to put more workers to work—the marginal product of labor exceeds the real wage.
12. It takes several years for the level of employment to respond to incentives and to return to normal after a recession.

Key Terms and Concepts

unemployment rate	job destruction	efficiency wage theory
participation rate	natural rate of	GDP gap
job-losing rate	unemployment	Okun's law
job-finding rate		

Questions for Discussion and Review

1. What is the difference between being unemployed and not working? Give some examples of people not at work who are not unemployed.